

CLAIMS

1. (currently amended) An ultrasonic washing method of washing a thing to be washed by supplying ultrasonic-wave-applied cleaning fluid to the thing, said ultrasonic washing method comprising applying an ultrasonic wave to a cleaning fluid in such a manner that said ultrasonic wave is turned on and off ~~repeatedly~~ periodically, wherein a turn-off period is ~~an alleviation period~~ necessary to ~~alleviate~~ decrease a vibration of the thing caused by applying said ultrasonic wave to the thing.

2. (previously presented) The ultrasonic washing method according to claim 1, wherein said ultrasonic wave is superimposed on a pulsed carrier wave.

3. (original) The ultrasonic washing method according to claim 2, wherein a frequency of said carrier wave is lower than an oscillation frequency of said ultrasonic wave.

4. (original) The ultrasonic washing method according to claim 1, wherein an oscillation frequency of said ultrasonic wave is 0.6 MHz or higher.

5. (previously presented) The ultrasonic washing method according to claim 2, wherein a duty ratio of the carrier wave is 80% or less.

6. (currently amended) A washing method comprising:
a first step of washing a thing to be washed by applying a first ultrasonic wave,
and

a second step of washing the thing by applying a second ultrasonic wave,
wherein said first ultrasonic wave and said second ultrasonic wave are alternatively applied to the thing, and wherein a frequency of said first ultrasonic wave and a frequency of said second ultrasonic wave are chosen to ~~alleviate~~ decrease a vibration

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
www.finnegan.com

caused by applying one of said first ultrasonic wave and said second ultrasonic wave to the thing.

7. (currently amended) The washing method according to claim 6, wherein said first ultrasonic wave and said second ultrasonic wave are applied to the thing to be washed at predetermined time intervals, and the predetermined time intervals are intervals necessary to ~~alleviate~~ decrease a vibration of the thing caused by applying said first ultrasonic wave and said second ultrasonic wave to the thing.

8. (previously presented) The washing method according to claim 6, wherein an oscillation frequency of each of said first and second ultrasonic waves is 0.6 MHz or higher.

9. (original) The washing method according to claim 6, wherein said first ultrasonic wave differs from said second ultrasonic wave in any one of phase, wavelength, and amplitude.

10. (original) The washing method according to claim 9, wherein the wavelength of said second ultrasonic wave is different from an integral multiple of the wavelength of said first ultrasonic wave or from $1/n$ (n is an integer) of the wavelength of said first ultrasonic wave.

11. (canceled)

12. (previously presented) The washing method according to claim 9, wherein an oscillation frequency of each of said first and second ultrasonic waves is 0.6 MHz or higher.

13. (withdrawn) A semiconductor device manufacturing method comprising a step of washing a surface at which a pattern including an island-like structure with a

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
www.finnegan.com

width of 0.2 μ m or less and an aspect ratio of 1.0 or more has been formed by applying a plurality of ultrasonic waves continuously.

14. (withdrawn) The semiconductor device manufacturing method according to claim 13, wherein said plurality of ultrasonic waves differs from each other in any one phase, wavelength, and amplitude.

15. (withdrawn) A semiconductor device manufacturing method comprising: a step of washing a surface at which metal wires are exposed by applying a plurality of ultrasonic waves continuously.

16. (withdrawn) The semiconductor device manufacturing method according to claim 15, wherein said plurality of ultrasonic waves differs from each other in any one of phase, wavelength, and amplitude.

17. (withdrawn) A method of manufacturing matrix-type display devices, comprising a step of washing a surface at which Si or metal wires are exposed by applying a plurality of ultrasonic waves continuously.

18. (withdrawn) The method according to claim 17, wherein said plurality of ultrasonic waves differs from each other in any one of phase, wavelength, and amplitude.

19. (canceled)

20. (currently amended) The method according to claim 7, wherein said first ultrasonic wave and said second ultrasonic wave are repeated at a specific time interval and the specific time interval is an interval necessary to ~~alleviate~~ decrease a vibration of the thing caused by applying said first ultrasonic wave and said second ultrasonic wave to the thing.

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
www.finnegan.com

21. (withdrawn) An ultrasonic washing method comprising a step of washing a thing to be washed by applying a plurality of ultrasonic waves continuously.

22. (withdrawn) The washing method to claim 21, wherein said ultrasonic waves are applied to the thing to be washed at predetermined time intervals.

23. (withdrawn) The washing method according to claim 22, wherein said ultrasonic waves differ from each other in any one of phase, wavelength, and amplitude.

24. (currently amended) An ultrasonic washing method of washing a thing to be washed by supplying ultrasonic-wave-applied cleaning fluid to the thing, said ultrasonic washing method comprising applying an ultrasonic wave to a cleaning fluid in such a manner that said ultrasonic wave is turned on and off ~~repeatedly~~ periodically, wherein a turn-off period is ~~an alleviation period~~ necessary to ~~alleviate~~ decrease a vibration of a silicon crystal caused by applying said ultrasonic wave to the thing.

25. (previously presented) The ultrasonic washing method according to claim 24, wherein said ultrasonic wave is superimposed on a pulsed carrier wave.

26. (previously presented) The ultrasonic washing method according to claim 25, wherein a frequency of said carrier wave is lower than an oscillation frequency of said ultrasonic wave.

27. (previously presented) The ultrasonic washing method according to claim 24, wherein an oscillation frequency of said ultrasonic wave is 0.6 MHz or higher.

28. (previously presented) The ultrasonic washing method according to claim 25, wherein a duty ratio of the carrier wave is 80% or less.

29. (currently amended) An ultrasonic washing method of washing a thing to be washed by supplying ultrasonic-wave-applied cleaning fluid to the thing, said

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
www.finnegan.com

ultrasonic washing method comprising applying an ultrasonic wave to a cleaning fluid in such a manner that said ultrasonic wave is turned on and off ~~repeatedly~~ periodically, wherein a turn-off period is ~~an alleviation period~~ necessary to ~~alleviate~~ decrease a vibration of a structure at a surface of a silicon crystal caused by applying said ultrasonic wave to the thing.

30. (previously presented) The ultrasonic washing method according to claim 29, wherein said ultrasonic wave is superimposed on a pulsed carrier wave.

31. (previously presented) The ultrasonic washing method according to claim 30, wherein a frequency of said carrier wave is lower than an oscillation frequency of said ultrasonic wave.

32. (previously presented) The ultrasonic washing method according to claim 29, wherein an oscillation frequency of said ultrasonic wave is 0.6 MHz or higher.

33. (previously presented) The ultrasonic washing method according to claim 30, wherein a duty ratio of the carrier wave is 80% or less.

34. (currently amended) A washing method comprising:
a first step of washing a thing to be washed by applying a first ultrasonic wave,
and
a second step of washing the thing by applying a second ultrasonic wave,
wherein said first ultrasonic wave and said second ultrasonic wave are alternatively applied to the thing, and wherein a frequency of said first ultrasonic wave and a frequency of said second ultrasonic wave are chosen to alleviate decrease a vibration of a silicon crystal caused by applying one of said first ultrasonic wave and said second ultrasonic wave to the thing.

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
www.finnegan.com

35. (currently amended) The washing method according to claim 34, wherein said first ultrasonic wave and said second ultrasonic wave are applied to the thing to be washed at predetermined time intervals, and the predetermined time intervals are intervals necessary to ~~alleviate~~ decrease the vibration of the silicon crystal caused by applying said first ultrasonic wave and said second ultrasonic wave to the thing.

35. (previously presented) The washing method according to claim 34, wherein said first ultrasonic wave and said second ultrasonic wave are applied to the thing to be washed at predetermined time intervals, and the predetermined time intervals are intervals necessary to alleviate the vibration of the silicon crystal caused by applying said first ultrasonic wave and said second ultrasonic wave to the thing.

36. (previously presented) The washing method according to claim 34, wherein an oscillation frequency of each of said first and second ultrasonic waves is 0.6 Mhz or higher.

37. (previously presented) The washing method according to claim 34, wherein said first ultrasonic wave differs from said second ultrasonic wave in any one of phase, wavelength, and amplitude.

38. (currently amended) A washing method comprising:
a first step of washing a thing to be washed by applying a first ultrasonic wave;
and

a second step of washing the thing by applying a second ultrasonic wave,
wherein said first ultrasonic wave and said second ultrasonic wave are alternatively applied to the thing, and wherein a frequency of said first ultrasonic wave and a

CI

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
www.finnegan.com

frequency of said second ultrasonic wave are chosen to alleviate decrease a vibration of a structure at a surface of a silicon crystal caused by applying one of said first ultrasonic wave and said second ultrasonic wave to the thing.

39. (currently amended) The washing method according to claim 38, wherein said first ultrasonic wave and said second ultrasonic wave are applied to the thing to be washed at predetermined time intervals, and the predetermined time intervals are intervals necessary to alleviate decrease the vibration of the structure caused by applying said first ultrasonic wave and said second ultrasonic wave to the thing.

40. (previously presented) The washing method according to claim 38, wherein an oscillation frequency of each of said first and second ultrasonic waves is 0.6 MHz or higher.

41. (previously presented) The washing method according to claim 38, wherein said first ultrasonic wave differs from said second ultrasonic wave in any one of phase, wavelength, and amplitude.

42. (currently amended) An ultrasonic washing method of washing a thing to be washed by supplying ultrasonic-wave-applied cleaning fluid to the thing, said ultrasonic washing method comprising applying an ultrasonic wave to a cleaning fluid in such a manner that said ultrasonic wave is turned on and off repeatedly by a carrier wave, wherein a turn-off period is ~~an alleviation period~~ necessary to alleviate decrease a vibration of the thing caused by applying said ultrasonic wave to the thing, and wherein a duty ratio of [[a]] the carrier wave is 80% or less.

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
www.finnegan.com